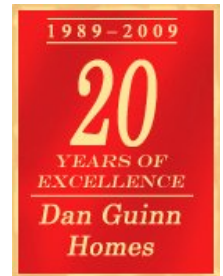


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# HOUSE WISE

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## Your Fridge is How Old?

By Elizabeth Guinn



*Between 9 & 15% of  
your total energy!*

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Is your refrigerator an energy hog? Do you have any idea how much energy your fridge uses? The average fridge consumes somewhere between 9 and 15 percent of your total energy dollars. So, if your fridge is using that much of your energy shouldn't you know if yours needs to be replaced?

Evaluating your appliance efficiency rates is something that we can help you with. It is part of what Dan does when he does an Energy Evaluation on your house. To help you understand just what changing out an old fridge can do for you I have asked for a volunteer. Don T. of Yorktown was nice enough to share his refrigerator make and model with me this past month. Don and his lovely wife, have a Whirlpool installed in March of 1999. Not that old you might say, it can't be that bad, right.

We did a little research using the model number on Don's

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## Dan's Desk

By Dan Guinn

Are you and your house feeling the pressure lately? What I mean is your forced air Heating, Ventilation and Air Conditioning systems (HVAC) effecting your energy consumption, and Indoor Air Quality (IAQ).

The trouble with our houses is they can't talk to us and tell us what's wrong. If they could, they may tell us the HVAC system has a problem that is causing your house to leak conditioned air. What this means is the supply side of the forced air system is losing air into unconditioned space,

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fridge, and discovered that it is a side by side style with In-Door-Ice Dispensing system. Unfortunately his model number is not listed as Energy Star rated which would show us estimated annual energy usage. Also, important information when doing an energy rating is determining features because, automatic ice systems use more energy than a fridge without, automatic defrost uses more energy as opposed to manual defrost, and side-by-side models use more energy than stacked units which have the freezer and the fridge space on top of each other. So, for our comparison, we will use a standard for energy usage with these features and taking in consideration for age.

I could compare Don's model with any brand of Energy Star rated fridge but just to make it simpler, we are going to use a current Whirlpool fridge with similar features, the ES5DVA. Without hooking up my TED (The Energy Detective) to Don's fridge for a period of time and then calculating annual energy usage, I can't estimate the amount of energy that his particular fridge uses. I can use a standard for refrigerators that were manufactured in that year. The figure for 1999 is 1,237 KW-hours per year. Sound like a lot? It is since 1999, many things have changed in the world of fridges. The insulation has gotten a lot better, compressor technology has improved greatly, and better sealing doors help to prevent frost as well as keep the cool air in.

If Don were to head to his local Lowe's and pick up the new 2009 Whirlpool that we have selected, how much energy would he save? Well first we would have to consider the cost of a new one. Don would have to shell out around \$1800 for the new unit. If he waited for the tax free weekend when there is no sales tax on Energy Star rated products, he would save on the tax. Which may not seem like much but stretching your money even a little bit helps in today's economy.

Secondly the Energy Star rating will determine the estimated amount of savings per year. The Whirlpool we selected has a 30% efficiency rating. Purchasing an Energy Star rated fridge today means that your fridge is operating at least 20% more efficiently than the average fridge and as much as 40% more efficient than one made as little as ten years ago. The energy efficiency of fridges has improved significantly in the past 15 years. So, owning a fridge that may have been a winner of a fridge just a few years ago could be really costing you some money compared to today's models. It is common to see older fridges moved to the garage or basement and continue in service as a secondary fridge. However, a fridge that is only 10 to 15 years old can use upwards of 2000 kilowatt-hours per year while a new energy efficient model only uses 500 kilowatt-hours per year. These are all things to keep in mind.



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through improperly sealed ductwork. When this happens it creates an imbalance in the system that causes pressure changes inside your house. Our systems are set up to be pressure balanced, this means that when a system is correctly installed the amount of air being supplied to the house is the same amount being returned through the return duct to the fan.

When your HVAC is operating properly, the air moves in a big loop throughout the house. So if there is leakage of air into say your attic through your supply duct, the result is the return side has to pull air from the house to replace it. This creates a negative pressure in your house, or more commonly known as a vacuum, and it causes your system to pull outside air into your house to make up for the air lost through your supply duct. Outside air comes in through all the cracks and crevices that it can find to replace the air the system is pumping into the attic.

The very same thing happens when you drink from a bottle of water. When you drink the water out of the bottle you create a negative pressure, and the sides of the bottle collapse because the water bottle has a really tightly sealed envelope if it didn't your water would all leak out. Fortunately your house does not collapse, but just like the water leaks out, negative pressure draws in air from all those little unsealed holes which can be found all over your house. Negative pressure can increase the amount of air a leak lets in by as much as ten to one hundred times the amount it would under normal conditions. So is your house feeling the pressure?

Although not as bad as negative pressure, positive pressure inside the house can also cause problems. This happens when the return side of your system is leaking into unconditioned spaces. It works exactly opposite to negative pressure, introducing more air into the system through duct leakage on the return side with the fan pumping it into your house, much like blowing up a balloon. You can imagine releasing the end of a balloon how rapidly the air escapes. This creates a surplus of conditioned air, which you pay money to condition by the way, to exit the house through all of the leaks. This is where the energy savings part comes in.

Think about the quality of air that is coming into the house this way. I don't know about your attic, but my attic isn't what I think of when I think of fresh air and musty crawl spaces are no better. This is how IAQ is affected by air leakage. We don't often think of our HVAC system as causing our allergies and sinus problems but it's doing just that by introducing unfiltered and even contaminated air into our houses. This air leakage carries with it dust, pollen, and moisture that can cause humidity problems in summer and winter. Worst of all, it can carry in mold spores and mildew from damp places.

So what is the answer to these problems you ask? The first step is determining whether or not your system is balanced. Special equipment is required for that and when hooked up to your duct system, can determine these conditions. This information is then compiled using state of the art computer software showing the measured amounts of air leakage. Once all the calculating is done, determining your best plan of action to correct the problem is what we do best. We take all of the guesswork out of trying to figure out how to save the most money by outlining the problem, the solutions, and even estimate the cost to fix it. Give us a call we would love to help make your house a more efficient, healthier place to live.



From *Fridge* page 2

Since Don and I don't live too far from each other, I'm betting he is paying the same for power that I am that is \$.0824 per KW-hour. So it costs him approximately \$102 estimated per year for his fridge to just be plugged in. The standards don't take into account things like children that like to use the light inside the fridge to navigate the kitchen at night among other variables. The new Energy Star rated Whirlpool model uses a whopping 509 KW-hours per year and would cost Don \$42 per year to operate that yields a savings of \$60 per year. At that rate it would take 30 years for Don to have saved enough money in energy savings to cover the cost of purchasing the new refrigerator, sooner as the cost of energy increases. So, even though Don's fridge is getting up there in years, unless he needs to replace his fridge for some other reason like repair costs exceed say 50% of replacement, a new one isn't economically feasible. But when he is ready to purchase, I'm sure Don will go for the Energy Star label.

Some other things to keep in mind when it comes to fridges: Setting your fridge between 30 to 40 degrees with the freezer between 0 to -5 degrees, using energy saver features, and regular maintenance like cleaning the coils on your unit with a soft brush at least once a year can all improve energy efficiency. Keeping vents clear of debris inside and outside our fridges helps to circulate air better. The little things we do can reduce our energy usage the most and help our appliances run at their peak efficiency.

Are you surprised by our calculations on Don's fridge? I have to admit I started this article thinking Don needed a new fridge but after doing the math maybe not yet. Although I believe any energy saving changes that we make, be it large or small, is a change for the better, doing so without considering the payback and economic viability of such changes may not be wise. This is where the help of a trained Energy Efficiency Professional can come in handy. We all want to save money, but we want to make the changes that will save us the most money. No problem, give Dan a call or shoot us an e-mail and we will set you up an appointment to put some of our energy saving ideas to the test.

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Contact Elizabeth and Dan Guinn at [info@danguinnhomes.com](mailto:info@danguinnhomes.com) for the free report, "Top Ten Best Ideas to Reduce Utility Bills and Spend the Savings on What You Really Want!" Just send me an email requesting a copy and I will speed one out to you!

**Taking you from  
Dreams to Reality  
Psalms 127:1a**